

Remarks

Claims 84-93 are pending in the Application.

Claim 84-87 stand allowed.

Claims 88-93 stand rejected.

I. REJECTIONS UNDER 35 U.S.C. § 102(e)

Examiner has rejected Claims 88-93 under 35 U.S.C. § 102(e) as being anticipated by US Patent Number 6,538,262 to Crespi ("*Crespi*"). Office Action at 2.

Examiner contends that "with regard to Claims 88-93, *Crespi* teaches nanotubes which comprise a plurality of carbon segments and a plurality of boron nitride segments (Figures 1, 7 and 8). In one embodiment, *Crespi* teaches that any ratio of the three elements (boron, carbon and nitrogen) can be present in the nanotubes and the nanotubes can consist of more than one wall." Examiner further contends that "*Crespi* teaches the embodiments wherein the nanotube comprises an outer wall of boron nitride and also the embodiment where the nanotube comprises a single wall of boron nitride. The nanotubes comprise honeycomb lattices or hexagonal rings." Office Action at 2-3.

Claim 88. Claim 88 requires "single-wall carbon nanotubes" that are "surrounded at least in part by an outer wall comprising a hexagonal boron nitride lattice wall structure." As the Examiner is well aware, for a claim to be anticipated under § 102, each and every element of the claim must be found within the cited prior art reference. *Crespi* does not disclose a single-wall carbon nanotube surrounded by an outer wall comprising a hexagonal boron nitride lattice wall structure. Nor has the Examiner pointed to any such disclosure in *Crespi*.

Moreover, the Examiner's "position" that "*Crespi* teaches the embodiments wherein the nanotube comprises an outer wall of boron nitride" is not supported. The reference to which the Examiner bases his position regarding *Crespi* appears to be Weng-Sieh, *et al.* "Synthesis of $B_xC_yN_z$ Nanotubes," Phys. Rev. B, Vol. 51, page 11229 (1995) ("*Weng-Sieh*") noted in *Crespi* at Col. 8, lines 24-26. Neither *Crespi* nor *Weng-Sieh* reflects any embodiments wherein the outer

wall of nested nanotubes includes, at least in part, a hexagonal boron-nitride lattice.¹ Rather *Weng-Sieh* teaches making multi-wall nanotubes with mixtures of boron, carbon and nitrogen (B:C:N) in different atomic ratios, wherein each layer of the nanotube would have the same or quite similar (B:C:N) composition.

Likewise, Examiner's "position" that the embodiments in *Crespi* (or *Weng-Sieh*) are nanotubes comprising single-wall boron nitride" is likewise in error. There is simply no such disclosure and it would not follow from the teachings of *Crespi*.

Thus, Claim 88 is not anticipated by *Crespi*.

Claim 89. Claim 89 requires a single-wall nanotube comprising a hexagonal boron nitride lattice wall structure. Again, *Crespi* does not disclose a single-wall nanotube having boron nitride in a hexagonal lattice wall structure. Figures 1, 7A and 8 in *Crespi* show single-wall tubes that are carbon nanotubes that have transition sections comprising pentagons and heptagons. Figure 7B is also a single-wall tube having only carbon atoms wherein the transition section comprises pentagons, hexagons and heptagons. Furthermore, *Crespi* does not teach how to make a single-wall nanotube having a hexagonal boron nitride structure. The *Weng-Sieh* reference cited in *Crespi* refers to making multi-wall nanotubes with mixtures of boron, carbon and nitrogen in different atomic ratios. Thus, Claim 89 is not anticipated by *Crespi*.

Claims 90-93. Claims 90-93 require single-wall nanotubes, either as a single tube or a plurality of single-wall carbon nanotubes, wherein a segment of the single-wall nanotube is a section of single-wall carbon nanotube and wherein a segment of the single-wall nanotube is a boron nitride nanotube. *Crespi* states that "a carbon tube with indices (n,m) can be joined to a boron nitride tube with indices (n,m) without the introduction of any topological defects." (*Crespi*, Col. 8, at lines 15-17.) However, this statement in *Crespi* is merely a suggestion of what one could possibly do; *Crespi* does not, in fact, explain how to go about doing so. Rather, *Crespi* was discussing hypothetically alternative ways to design junctions that match tubes with different electrical properties, without using the pentagon-heptagon pairs disclosed in *Crespi*.

¹ Applicants have attached the *Weng-Sieh* reference hereto at Attachment A.

Crespi, col. 8, ll. 5-26. A method for "joining" is not taught, nor does the reference discussed (*Weng-Sieh*) enable this suggestion.

A claimed invention cannot be anticipated by a prior art reference (such as *Weng-Sieh*) if the allegedly anticipatory disclosures cited as prior art are not enabled. *Amgen Inc. v. Hoechst Marion Roussel Inc.*, 314 F.3d 1313, 1354, 65 U.S.P.Q.2d 1385, 1416 (Fed. Cir. 2003). The Federal Circuit and its predecessor courts have long recognized "that a non-enabled disclosure cannot be anticipatory (because it is not truly prior art) if that disclosure fails to 'enable one of skill in the art to reduce the disclosed invention to practice.'" *Id. see also In re Borst*, 345 F.2d 851, 855, 145 U.S.P.Q. 554, 557 (C.C.P.A. 1962). Given that there is no teaching or even a suggestion as to how to perform the hypothetical joining suggested in *Crespi*, *Crespi* is not an enabling disclosure and thus not truly prior art that anticipates the present invention specified in Claims 90-93.

Applicants further point out that the statement quoted above in *Crespi* is directed to nanotubes in general. Thus, the statement further does not anticipate because each of Claims 90-93 is directed to single-wall carbon nanotubes.

Thus, Claims 90-93 are also not anticipated by *Crespi*.

As a result of the foregoing, Applicants respectfully request that the Examiner withdraw the rejection of Claims 88-93 under 35 U.S.C. § 102(e) as being anticipated by *Crespi*.

II. ALLOWABLE SUBJECT MATTER

Claims 84-87. The Examiner indicated that Claims 84-87 are allowed. Office Action at 3.

III. AMENDMENTS TO THE DRAWINGS

The present application and United States Patent Application Serial No. 10/027,568, filed December 21, 2001 ("the '568 Patent Application") are both divisional patent applications of the United States Patent Application Serial No. 10/000,746, filed November 30, 2001, all of which applications are commonly assigned. On October 7, 2002, a Notice of Allowance was transmitted to Applicants for the '568 Patent Application; and Applicants paid the issue fee on

October 16, 2002. Subsequently, on March 20, 2003, Applicants received a Notice Regarding Drawings for the '568 Patent Application. Specifically, the Draftperson's review objected to the drawings for Figures 2A-C, 4A-D, 6, and 7A-B for the following reasons set forth on PTO Form 948, which was attached to the Notice Regarding Drawings for the '568 Patent Application. These were:

(a) Under 37 C.F.R. § 1.84(i), for Figures 2A-C, 4A-D, 6, and 7A-B, "[l]ines, numbers & letters not uniformly thick and well defined, clean, durable, and black (poor line quality)."

(b) Under 37 C.F.R. § 1.84(m), for Figures 2A-C, 4A-D, 6, and 7A-B, "[s]olid black shading not permitted."

(c) 37 C.F.R. § 1.84(p), for Figures 4A-D, 6, and 7A-B, "[n]umbers and reference characters not plain and legible."

On May 19, 2003, Applicants filed their Response to Notice Regarding Drawings in the '568 Patent Application. In this response, Applicants replaced new drawing sheets 3/14, 6/14, 8/14, 9/14 and 10/14 for the original sheets. These sheets include more legible Figures 2A- 2C, 4A- 4D and 6 – 7B as requested by the Draftperson. in the Notice Regarding Drawings for the '568 Patent Application.

As the present Application contains these same drawings, Applicants are submitting these improved figures in the present Application. Pursuant to 37 C.F.R. 1.84(b), the improved figures are submitted as photographs, as this is the only practicable medium for illustrating these figures.

Applicants have amended the drawings to facilitate prosecution of the present Application; Applicants believe by doing so, this will obviate this potential issue with the figures.

IV. AMENDMENTS TO THE SPECIFICATION

After Applicants filed their Response to Notice Regarding Drawings in the '568 Patent Application, Applicants received a Notice of Drawing Inconsistency with Specification in the '568 Patent Application, dated June 2, 2003. In this Notice, Applicants were informed that the USPTO had received the improved figures (which presumably were accepted by the

draftsperson) but the USPTO had now identified an inconsistency between the drawings and the Brief Description of Drawings in the '568 Patent Application. These were: The Brief Description referred to Figures 3A-3B and 5A-5B while the drawings contained Figures 3A-3C and 5A-5C. On June 30, 2003, Applicants filed their Amendment in Response to Notice of Drawing Inconsistency with Specification in the '568 Patent Application. In that amendment, Applicants amended the Brief Description of Drawings and the Detailed Description of the Invention, in the identical manner as presented on page 2 above.

Because this same issue exists in the present Application, Applicants are amending the specification in the same manner as they did in the '568 Patent Application. Accordingly, in the specification, the paragraphs within the Brief Description of Drawings have been amended to correctly identify the drawings. In the Detailed Description of the Invention of the Specification, the amendment of the paragraph beginning at page 18, *l.* 11, was made to harmonize the written description and the drawings. No new matter is added by these amendments to the specification.

The Applicants believe this amendment reconciles the inconsistency between the drawing and the Brief Description of the Drawing. Again, Applicants are amending the specification to facilitate prosecution of the present Application. Applicants believe by doing so, this will obviate this potential issue between the drawings and the specification.

V. CONCLUSION

As a result of the foregoing, it is asserted by Applicants that the Claims in the Application are now in a condition for allowance, and respectfully request allowance of such Claims.

Applicants respectfully request that the Examiner call Applicants' attorney at the below listed number if the Examiner believes that such a discussion would be helpful in resolving any remaining problems.

Respectfully submitted,

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